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10/550,344

09/22/2005

Nicolas Villain

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EXAMINER

CWERN, JONATHAN

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/550,344  
Filing Date: September 22, 2005  
Appellant(s): VILLAIN ET AL.

\_\_\_\_\_  
Robert M. McDermott  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 3/23/09 appealing from the Office action mailed 10/23/08.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

Claim 11 is canceled.

Claims 1-10 are pending in the application.

Claims 1-10 stand rejected by the Examiner under 35 U.S.C 102(b).

Claim 10 stands rejected by the Examiner under 35 U.S.C. 101.

Claim 9 stands rejected by the Examiner under 35 U.S.C 112, second paragraph.

This appeal involves claims 1-10.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

**6,389,310**

**DEMONCEAU ET AL.**

**5-2002**

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 is confusing, it is unclear how forming a volume of digital data differs from acquiring a volume of digital data.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 10 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim is directed to non-statutory subject matter because the claim does not contain a useful, concrete, and tangible result. The claim also does not provide a sufficient tie to another statutory class for performing the method or transform underlying subject matter to a different state or thing. It is an improper process claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Demonceau et al. (US 6389310).

Demonceau et al. show, acquisition means to acquire a volume of 3D data comprising an object of interest (column 18, lines 40-55); segmenting a region of interest comprising the object of interest within the volume (column 28, lines 25-30); displaying a 2D representation of the volume and segmented region of interest (column 31, lines 40-50); calculation a sub-region map within the segmented region (watersheds used to removed segments at the border of the image and segments isolated in the

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background, this new image caused by watershed segmentation can be called the sub-region map, column 28, lines 30-50); excluding sub-regions from the region of interest using the sub-region map (column 28, lines 30-50). Demonceau et al. also show, calculating a map of distances (distances are used to identify and segment the Aorta Descendens, the combination of these calculated distances can be called a “map of distances”, column 21, lines 1-25; a map of distances is also used to correct for movement of the Valvular Plane, again the combination of the calculated distances can be called a “map of distances”, column 25, lines 10-25); merging sub-regions (column 22, lines 20-45); user control to select sub-regions for exclusion (column 32, lines 5-35); updating the 2D representation to take into account effects of the excluded regions (the 2D displays can be calculated earlier in case the user makes no changes, this implies that if the user makes changes, the 2D displays will have to be updated, column 31, lines 40-50; further discussion of user control, two-dimensional representation, and displays can be found in column 31, line 50-column 39, line 15, wherein the user makes changes if desired to re-segment the image, the 2D representations are made and then displayed); labeling the sub-regions (column 20, line 27); forming a volume of digital data including the object of interest (forming is taken to mean reconstructing the data, column 18, lines 45-55); and a computer program product (column 3, lines 25-40).

It should be noted that specific examples are given above for each claim, however they can be interpreted in a variety of ways. Demonceau et al. teach a method involving segmenting an image to label each part of the heart. The entire heart can be considered the region of interest, and each part of the heart can be considered a sub-

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region or sub-region map. And in finding and segmenting out each part of the heart, Demonceau et al. are excluding certain sub-regions from other sub-regions. In other words, the very act of segmenting involves excluding one region from another region! There are various segmentations performed in each step to isolate individual regions of the heart. In addition, there is a broader segmentation performed at the end in which the user can choose to segment the images again based on the user's preference. All of these different segmentations should be considered, as any can be considered the overall region of interest, or a more specific sub-region map.

#### **(10) Response to Argument**

In regards to appellant's arguments regarding regions and sub-regions in the Demonceau reference, examiner respectfully disagrees. While Demonceau may not explicitly use the terms "regions" and "sub-regions", Demonceau teaches segmenting regions and sub-regions in a variety of examples throughout the reference. Examiner has identified some of these examples above, and there are many more throughout the reference.

Appellant argues that Demonceau only produces a single collection of regions (LV, RV, etc.), and that the entire heart cannot be considered the region of interest, and examiner respectfully disagrees. Demonceau is concerned with segmenting and labeling the heart. An image of the heart is thus acquired. In column 20, lines 45-57, a segmentation step is applied to an input image. This results in a segmented image of

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the heart. This segmented image of the heart can be considered to be the claimed "segmented region of interest". Appellant's arguments appear to imply that because Demonceau did not explicitly state that this would be a "heart region", it cannot be referred to as such, and examiner respectfully disagrees with such an argument.

Simply because Demonceau did not explicitly state that the segmented image of a heart is a "heart region" does not prevent the examiner from interpreting it as such.

Demonceau then proceeds to perform additional processing steps to determine and label individual areas of interest within the heart, such as the Aorta Descendens, the spleen, the valvular plane, the septum, etc. Each of these can be considered a "sub-region map". Demonceau uses these individual sub-regions throughout the reference to further label other areas of the heart, for example the left and right ventricles, by excluding previously labeled sub-regions (column 21, lines 45-55, column 28, lines 24-47, column 29, lines 1-27, column 30, lines 29-54, column 35, lines 43-67). This can be considered the claimed correction means and excluding steps. In addition, it should be noted that the very act of segmentation involves excluding one area from another. The terms "correcting" and "excluding" can be interpreted more broadly to include the very act of segmenting itself. When the overall heart region is segmented, for example into the Aorta Descendens and the spleen, the segmentation excludes the area of the image containing the Aorta Descendens from the area of the image containing the spleen. In addition, labeling of those areas can also be considered "correcting". Thus, the examiner respectfully disagrees with appellant's argument that Demonceau fails to



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teach correcting a segmented region by calculating a sub-regions map and excluding sub-regions.

Appellant also refers to a "two-step segmentation" process throughout the arguments, as well as indicating that Demonceau only uses a "single segmentation process". It appears that appellant is attempting to create a distinction between the instant invention and the Demonceau reference which is not based on the claim language. The claim language does not refer to "two-step segmentation" or that segmentation is performed multiple times. The claim language only refers to segmenting a region of interest and then "determining" or "calculating" a sub-regions map.

Thus, the examiner does not believe that such an argument should be given weight. But, even if one were to consider appellant's arguments that Demonceau only uses "a single segmentation process", examiner would respectfully disagree. Demonceau provides multiple examples of segmenting more than once.

In column 20, lines 45-57 (part of stage 3), a first segmentation step is identified. The following, column 20, line 58-column 21, line 44 describes labeling of the aorta descendens (AoD) and the spleen (Spl). Column 21, lines 45-column 22, lines 47 describe labeling of the Valvular Plane (VP) and Septum (S). Within this section, it is first noted that the VP and S are determined based on the matrix corresponding to the normalized 4D input image after subtraction of the AoD and Spl, called the amended 4D input image or amended matrix. This image/matrix has therefore already undergone a

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first segmentation above in order to determine and subtract the AoD and Spl, and thus can be considered a segmented region of interest. A second segmentation is carried out as identified in column 22, lines 15-20. The end result of which is the labeling of the VP, which can be considered the sub-regions map. This is also described for labeling the Septum in column 23, lines 46-60. Again, it should be noted that while Demonceau does not explicitly use the terms "segmented region of interest" and "sub-regions map", the above identified features can clearly be considered as such.

In an additional example, in column 27, lines 55-65 (stage 9), a first segmentation of an image is identified. A second segmentation is then identified in column 28, lines 23-45 (stage 11), note that stage 9 is referred back to. Also, in column 29, lines 1-27.

In an additional example, column 32, lines 5-35 describe how a user can re-segment a specific segment.

In regards to appellant's arguments regarding the 101 rejection, examiner respectfully disagrees. Appellant refers to *In re Bilski* and *Abele*, and indicates that the step of excluding sub-regions should be considered a transformation. Examiner respectfully disagrees. Merely obtaining data and then excluding/removing some of that data does not result in a transformation of the data. The data remains the same, it is merely divided up. The quoted section of *Bilski* referring to *Abele* states that "the transformation of that raw data into a particular visual depiction of a physical object on a display was sufficient to render that more narrowly-claimed process patent-eligible."

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The data in the claimed invention is NOT transformed into a visual depiction, claim 10 contains no limitations which involve transforming data into a generated image which can be displayed. As stated above, the data is merely divided up, it undergoes no transformation. Appellant's arguments also use the term "3-D image" however again it should be noted that claim 10 contains no limitations regarding an "image". Only "three-dimensional digital data" is referred to, the data never undergoes a transformation into an image. In addition, there is no tie to a machine in the claims, and appellant has not identified one. Thus, the claim does not meet either part of the machine or transformation test.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,  
/Jonathan G Cwern/  
Examiner, Art Unit 3737

Conferees:

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/BRIAN CASLER/  
Supervisory Patent Examiner, Art Unit 3737

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